REPORT NO. 122
Second Quarter 1974
issued February 1975

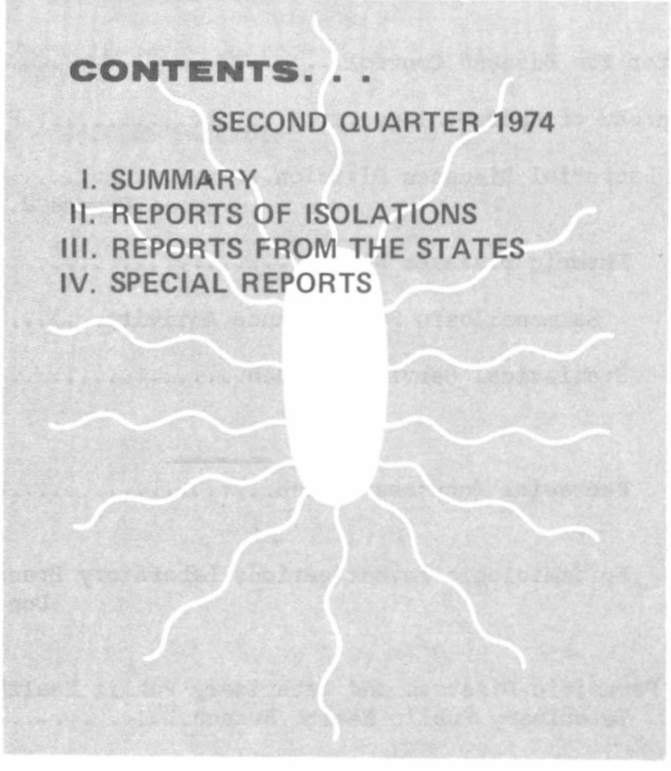
CENTER FOR DISEASE CONTROL

SALMONELLA

SURVEILLANCE

CONTENTS. . .

SECOND QUARTER 1974



U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE/PUBLIC HEALTH SERVICE

PREFACE

Summarized in this report is information received from state and city health departments, university and hospital laboratories, the U.S. Food and Drug Administration, and other pertinent sources, domestic and foreign. Much of the information is preliminary. It is intended primarily for the use of those with responsibility for disease control activities. Anyone desiring to quote this report should contact the original investigator for confirmation and interpretation.

Contributions to the Surveillance Report are most welcome. Please address:

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SUGGESTED CITATION

Center for Disease Control: Salmonella Surveillance Second Quarter 1974 issued February 1975

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NOTE

The data contained in the tables and summarized in sections I and II deal only with isolates reported to CDC by state and other reference laboratories. Extrapolation from these data to aspects of the total incidence of salmonellosis in the United States should be made only with caution, and references to the data should be appropriately qualified.

I. SUMMARY

In the second quarter of 1974, 5,110 isolations of salmonellae were reported from humans, an average of 393 isolations per week (Tables I, II and V-A). This number represents a decrease of 31 (7.3%) from the weekly average for the first quarter 1974 and a decrease of 46 (10.5%) from the weekly average for the second quarter 1973. The average number of human isolations reported per week for each month and for the quarter are provided below for the last 3 years.

	1972	1973	1974
April	382	432	345
May	487	404	384
June	472	490	453
Second Quarter (monthly average)	450	439	393

Reports of 1,322 isolates of salmonella from nonhuman sources were received in the second quarter of 1974 (Tables III, IV, and V-B).

II. REPORTS OF ISOLATIONS

The 10 most frequently reported serotypes during the second quarter are listed below:

HUMAN				NONHUMAN		
Serotype	Number	Percent	Rank last quarter	Serotype	Number	Percent
typhimurium*	1,655	32.4	1	typhimurium*	456	34.5
enteritidis	363	7.1	4	montevideo	59	4.5
newport	289	5.7	2	cholerae-suis	55	4.2
infantis	267	5.2	3	anatum	49	3.7
heidelberg	252	4.9	5	newport	45	3.4
saint-paul	195	3.8	7	heidelberg	38	2.9
agona	179	3.5	6	worthington	37	2.8
typhi	134	2.6	9	saint-paul	32	2.4
thompson	92	1.8	12	infantis	31	2.3
montevideo	84	1.6	15	senftenberg	27	2.0
Total	3,510	68.7			829	62.7
TOTAL (all serotypes)	5,110	100.0		TOTAL (all serotypes)	1,322	100.0
*Includes var. copenhagen	81	1.6		*Includes var. copenhagen	88	6.7

III. REPORTS FROM THE STATES

A. Reports of Salmonella Outbreaks Received in the Second Quarter, 1974:

This table lists investigated outbreaks of salmonellosis reported to CDC from various sources. Definitions of cases and of numbers at risk are not uniform from report to report. This listing should not be considered comprehensive or representative of all outbreaks in the United States, as most outbreaks are probably not reported to CDC.

State	Month of Outbreak	Location	Serotype	Ill	At Risk	With Positive Cultures	Hospitalized	Deaths	Vehicle of Transmission	Comments
Arizona	Mar-Apr.	Maricopa Co.	S. norwich	19	60	9	8	0	not determined	No common exposure or vehicle identified
Kentucky	Dec-Apr.	Louisville	S. typhimurium	9	?	9	9	5	? person-to-person	Outbreak in intensive care nursery*
Maryland	Feb.	Baltimore	S. st. paul	6	?	7	7	?	? person-to-person	Outbreak in nursery and pediatric ward
Oregon	Dec-Jan.		S. infantis	3	?	?3	?	?	? cold turkey sandwiches	Outbreak on passenger train
Calif.	Apr '71-Mar '74		S. dublin	<79	?	79	59	16	certified raw milk associated with >31 cases	Many cases associated with consumption of certified raw milk from a single herd
Calif.	Mar-Apr.	Los Angeles	S. typhi	> 1	8	7	1	?	carrier from Mexico in household	Outbreak in family
New York	May	Chappaqua	S. typhi	3	?	3	3	0	? grandmother (known carrier)	Outbreak in family
Washington			S. typhi	5	?	2	5	0	carrier in community with ? waterborne transmission	Outbreak in community
Miss.	May-June	Jackson	S. typhi	3	?	2	3	0	? grandmother (known carrier)	Outbreak in neighborhood

*Does not include 9 community-acquired cases having identical antimicrobial sensitivity pattern.

IV. SPECIAL REPORTS

A. Human Salmonella dublin Infections Associated with Consumption of Certified Raw Milk in California.

Reported by Ichiro Kamei, M.D., Chief, Acute Communicable Disease Control Division, Louis Mahoney, M.D., Director, Immunization Project, and Ralph R. Sachs, M.D., Deputy Director, Los Angeles County Community Health Services, and Edward Aaron, D.V.M., Chief of Veterinary Public Health, Los Angeles County Comparative Medicine and Veterinary Public Health Services, Los Angeles County Department of Health Services; S. Benson Werner, M.D., Medical Epidemiologist, Infectious Disease Section, and George L. Humphrey, D.V.M., Chief Public Health Veterinarian and Chief, Veterinary Section, California Department of Health; and an EIS Officer.

Between April 1, 1971, and March 31, 1974, Salmonella dublin was isolated from 79 persons in California, 37 of whom had underlying debilitating conditions. Patients' ages ranged from 1 month to 88 years; 54 (68%) were more than 19 years of age, compared with 32% in these age groups for all salmonellosis cases reported nationally. In 52 (66%) of the cases, S. dublin was cultured from deep tissue sites, including blood (46 cases), urine (3 cases), and other tissues (3 cases). Fifty-nine (75%) of the patients were hospitalized, and 16 (20%) died. Thirteen of the deaths occurred in patients with pre-existing illnesses such as malignancies and hematopoietic disorders.

Since S. dublin outbreaks in California in 1958 (47 cases) (1) and 1964 (2 cases) had been associated with consumption of certified raw milk, histories of milk consumption were obtained from 74 patients with S. dublin infection between April 1971 and March 1974. Certified raw milk produced at a single large dairy had been consumed in households of 31 (42%) of 74 patients contacted; this dairy produces less than 0.5% of all milk sold in California. Milk from this same dairy was also implicated in the 1958 and 1964 outbreaks.

Beginning in 1973, all human Group D salmonella infections in Los Angeles County were extensively investigated prior to obtaining definitive serotyping. In the 36 patients with Group D salmonella infection studied through March 1974, eventual serotyping revealed 16 S. dublin infections and 20 infections due to Group D salmonellae other than S. dublin. When food preference histories of the 16 patients with S. dublin infection were compared with those of the 20 control patients who had other Group D infections, only 1 food item could be implicated as a vehicle of infection; certified raw milk produced at the dairy incriminated previously was consumed in 10 (63%) of the 16 households in which S. dublin cases occurred; none of the 20 control households had used this milk ($p = .000032$).

In 1972, a screening program was conducted to detect salmonella-infected cattle in the 2 geographically separated herds (herd A and herd B) maintained by the implicated dairy. Two serial fecal culture surveys revealed salmonella infections in 31 (1.5%) of the 2,100 cattle in herd A, including 13 S. dublin infections. All cattle found to be shedding salmonellae were immediately culled from the herd. No salmonellae were recovered from the 1,000 cattle in herd B.

Because of a sudden increase in the number of human S. dublin cases reported from California in January and February 1974, additional bacteriologic sampling of milk from this dairy was undertaken. In March 1974, after more than 40 quarts of certified raw milk had been cultured with negative results, S. dublin was recovered from 1 quart of raw milk. Three additional fecal culture surveys of the 2,100 cattle in herd A were therefore performed in March and April 1974. Although no S. dublin shedders were identified, 16 cattle were shedding S. typhimurium and one S. livingstone.

Editorial Note: Human and animal S. dublin infections are rare in areas of the United States east of the Rocky Mountains. Since 1963, a total of 116 human infections have been reported to the Salmonella Surveillance Activity, CDC, from the entire United States; of these 95 (82%) were reported from California. In the same period, 399 non-human isolates of S. dublin were reported, including 333 (83%) from California. Of 382 isolates in which the source was known, 370 (97%) were of bovine origin, indicating the marked host specificity of S. dublin for cattle.

In cattle and in humans this organism is frequently invasive. Infection in cattle results in high mortality rates in infected calves and abortions in cows (2).

S. dublin has been isolated from the udders of cattle with chronic mastitis (3), suggesting that milk may be contaminated without exposure to feces or other exogenous sources of contamination.

Cattle which shed fecal salmonellae intermittently, or which have localized infections in sites such as the udder, often would not be identified by fecal culture surveys. Milk pasteurization would eliminate the human health hazard associated with such bovine infections.

References

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2. Richardson A, Watson WA: A contribution to the epidemiology of Salmonella dublin infection in cattle. Brit Vet J 127:173-183, 1971
3. Zagaevskii IS: Sources of contamination of milk with salmonella on dairy farms. Voprosy Pitaniya 21:86-87, 1962

B. Foodborne Salmonella derby Gastroenteritis in Trinidad. Reported by R. M. A. Doug Deen, M.D., Principal Medical Officer, M. Henry, M.D., Chief Medical Officer, L. V. Butcher, D.V.M., Acting Director, Veterinary Public Health, Teasley Taitt, Permanent Secretary, and S. Ali, Statistician, Ministry of Health, Port of Spain, Trinidad; N. Swanston, M.D., Director, Public Health Laboratory, Port of Spain, Trinidad, Miles Williams, M.D., Acting Director, Colin O'Colmain, M.D., Trinidad Representative, Pan American Health Organization/World Health Organization, and B. Hull, Trinidad Regional Virus Laboratory, Port of Spain, Trinidad; and an EIS Officer.

Between March 1 and November 30, 1973, an epidemic of Salmonella derby gastroenteritis affected approximately 3,000 people in Trinidad. Most of those affected were small children; 73.7% of the cases were in the less than 1 year age group.

In the early stages of the epidemic, bacteriology laboratories in Trinidad were only equipped to identify salmonella isolates by group; the large majority of salmonellae were identified as Group B. A single Group B isolate sent to the Central Public Health Laboratory, Colindale, London, from Trinidad was identified as S. agona; subsequent reference cultures typed at the same laboratory and at CDC showed that 36 of 39 (92.3%) Group B isolates tested were S. derby. Salmonella isolates sent to the University of the West Indies, Kingston, Jamaica, for serotype identification in March 1973 and initially identified as S. agona were reported in August 1973 to be S. derby by the Colindale laboratory. S. derby is antigenically very similar to S. agona. The initial belief that S. agona was the responsible serotype suggested that poultry was the source of the epidemic (1). All Group B isolates examined in Trinidad after mid-September 1973, when typing sera enabling differentiation of S. derby and S. agona was available, were S. derby.

Two studies were performed to determine the cause of this outbreak. The first, conducted in the latter part of 1973, consisted of a survey of case households to determine possible sources of infection. Information obtained in the survey showed that illness among children less than 1 year of age was significantly associated with consumption of powdered milk products ($p < .05$). The second, in May 1974, consisted of a sample survey of control households and of studies of the manufacture and distribution of powdered milk products. This investigation revealed that 7 different brands of powdered milk were imported in bulk and processed at a single plant. While a statistical association was demonstrated between the occurrence of salmonellosis and consumption of powdered milk products packaged at the plant ($p < .01$), no single brand of powdered milk was significantly associated with salmonellosis.

The original source of S. derby was not determined. Multiple samples of unpackaged milk powder obtained at the plant prior to processing and several shelf samples of packaged powder from local groceries were examined in the latter part of 1973 and were culture negative. Swabs of equipment, floors, walls, and environment at the plant obtained in May 1974 were also culture negative. The absence of positive salmonella cultures from samples of milk powder was not felt to be a strong point against contamination, since recovery of salmonella from powdered milk depends

greatly upon the species involved, the method of reconstituting the powder, and culture techniques (2,3).

The possibility that milk could have been contaminated at the time of importation could not be ruled out. Investigation revealed a limited number of sites where human contact might contaminate the milk powder; a worker in one of these areas was found to be an asymptomatic carrier of the same group salmonella as the epidemic serotype (4). The asymptomatic carrier may have acquired her infection in the plant and disseminated it only secondarily if at all. Other workers who were culture negative on a single rectal swab specimen may have been asymptomatic excreters; a single specimen has been shown to be positive less than 50% of the time in known carriers of S. derby, and up to 7 swabs may be necessary to detect 95% of carriers (5). Ultimately, the source of the contamination could not be established.

Control measures undertaken included the transfer of the asymptomatic salmonella carrier to an area of the plant where she was not in contact with the product, and discussion of procedure modifications to insure the bacteriologic safety of the finished product.

Editorial Note: The onset of this epidemic was obscured by the high level of endemic gastrointestinal illness in Trinidad, by ambiguous and confusing early bacteriologic data, and by a surveillance system which initially was insensitive to fluctuations in reported cases that would allow an outbreak to be rapidly recognized. In addition to adding to our understanding of the important problem of salmonellosis in dairy products, this investigation served to underscore the importance of effective surveillance techniques in the prevention and control of communicable diseases. Notable efforts were made by local officials during this outbreak to improve surveillance and reporting, and by the end of 1973 a reasonably effective system had been established. Since adequate baseline data is the foundation of epidemiologic studies, the importance of maintaining an effective surveillance system during non-epidemic periods cannot be overemphasized. This investigation illustrates the importance of the case-control study in epidemic investigations.

References

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2. Wells JG, Morris GK, Brachman PS: New method for isolating salmonellae from milk. Appl Microbiol 21:235-239, 1971
3. Julseth RM, Deibel RH: Effect of temperature on growth of salmonella in rehydrated skim milk from a food-poisoning outbreak. Appl Microbiol 17(5):767-768, 1969
4. Pether JVS, Gilbert RJ: The survival of salmonellae on fingertips and transfer of the organisms to food. J Hyg (Camb) 69:673-681, 1971
5. McCall CE, Sanders WE, Boring JR, et al: Delination of disease carriers of Salmonella derby in an institution for incurables. Antimicrob Agents Chemotherapy 4:717-721, 1965

C. Salmonellosis - British Columbia. Reported by P. J. Reynolds, M.D., Ch.B., D.P.H., F.R.C.P., Director and Medical Health Officer, Central Vancouver Health Unit, Nanaimo, British Columbia, in the Epidemiological Bulletin 18:35-37, 1974

On November 4, 1973, a 14-year-old boy was seen in the emergency department of a local hospital with a 2-week history of influenza-like illness; his symptoms included diarrhea, vomiting, stiff neck, and polymyalgia. His left hand was swollen and quite painful so as to make movement of his fingers difficult. There was no other joint involvement. The wrist was splinted, and he was sent home with a supply of aspirin tablets.

Subsequently, on November 6, he visited the office of his family physician complaining that both feet were tender and painful and that he had difficulty walking. He was admitted to the hospital the same day. There was nothing of significance in his previous medical or family history to suggest a specific illness. Physical

examination revealed a toxic, thin boy with generalized lymphadenopathy and a pulse rate of 100 per minute.

Examination of his joints revealed marked swelling and tenderness of the left wrist with some tenderness in the metacarpophalangeal joints. There was some tenderness in the region of both ankle joints and marked tenderness over the tarsus of both feet.

On admission, he was observed to have spiking temperatures as high as 38.5°C. He was treated with ampicillin 250 mg 4 times a day and enteric-coated aspirin. Blood studies revealed a hemoglobin of 11.5 gm and a sedimentation rate of 117 ml/hr. The white blood cell count was 10,800 (differential: polymorphonuclear leukocytes 66%, lymphocytes 17%, monocytes 6%, eosinophils 5%). Although a blood culture was negative, a stool culture revealed the presence of Salmonella typhimurium, phage type 3, resistant to ampicillin. Stool specimens were collected from all family household contacts. The family consisted of the patient, his parents, and 6 other children. Subsequent reports on specimens submitted showed that the mother and 2 children at home were also infected with S. typhimurium, phage type 3. The father and the other 4 children were culture negative.

Further inquiry revealed that the family had kennels used for breeding both dogs and cats. Six kittens born in August 1973 had developed diarrhea. No symptoms were observed in the canine population. The patient, the 2 children with positive stools, and the mother, also positive, were the only family members regularly handling the litter boxes of kittens. At the time of the investigation, there were 9 dogs and 11 cats on the premises. Six dogs and 3 cats were infected with S. typhimurium, phage type 3. All but 1 of the specimens of food fed the animals were negative. Minced raw chicken and meat scraps were contaminated with S. typhimurium, phage type 3. Frozen samples of the raw meat and poultry obtained from a nearby supplier for consumption by the animals were also found to be contaminated with S. typhimurium, phage type 3.

By the end of December all members of the family except the patient had negative stool cultures. On the advice of health authorities, none of the infected persons received specific treatment. Significantly, the patient who had received cephaloridine in addition to a course of ampicillin was the last of the family members to become culture negative.

Editorial Note: This incident illustrates a common pathway of transmission of salmonellosis - from contaminated animal food to pets to man. The initial source of contamination of the animals was animal feed. Raw poultry viscera should always be presumed contaminated. Such outbreaks can be prevented by thorough cooking of all food from animal sources for consumption by pets as well as man.

The etiology of the arthralgia in the 14-year-old boy was probably salmonella-induced polyarthritis. Arthritis is a recognized complication of salmonellosis, particularly infections caused by Salmonella cholerae-suis and S. typhimurium (1,2).

References

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2. Schmid FR: Unusual features and special types of infectious arthritis. In Arthritis and Allied Conditions, edited by Hollander JL. 8th ed. Philadelphia, Lea & Febiger, 1972, p 1267

TABLES

TABLE I COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, SECOND QUARTER, 1974

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																													
	NEW ENGLAND						MIDDLE ATLANTIC					EAST NORTH CENTRAL					WEST NORTH CENTRAL							SOUTH ATLANTIC							
	ME	NH	VT	MAS	RI	CON	NYA	NYB	NYC	NJ	PA	OHI	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA
anatum			1	1				1	3	4	1	3	1	3	3		2		1				1		2		1	1	3		4	1
bareilly	3							1		1							1														1	1
blockley	1			2		3		11	3	3	3	3		3	3	1								2	1		1	1			1	
braenderup								2	1	2	1			1	2														1		1	1
bredeney						1		1	2	3	2	1		5		1													2			
chester				7	1	2											1														1	
cholerae-suis v kun						1								2											1				2			
cubana												1		1													1					
derby			1					3	1		1	6	1	9	4	2			2				1		5		2		1		5	
enteritidis			3	13	1	7		58	19	13	17	7	2	83	11	6	16	1	1	2			4	1	12			2	8	3	10	3
give											1				1										1							
heidelberg			1	2		2		5	4	8	11	3	5	38	16	7	4	1	6		1		10	1	17	1	15		5		7	
indiana								2	1	1	1			2											5		1				1	1
infantis				6		1	1	9	4	15	4	1	3	24	22	10	13	2	6	2			4	2	10		7		6	1	14	1
java				3										14			2		2				3								5	1
javiana															2								2								1	17
litchfield								2		1			2	1	1				2										1		1	2
livingstone															1												1					
manhattan				1				4	5	2	6	3		9	1	2									4				2			
miami										1	1			4		9															2	5
mississippi																															9	
montevideo				4		3		3		8	4	2		5	3				1				2	3	5		9		1		5	
muenchen						2		2	1	2	2		2	2	5	1			5				1		3			1	2	1	14	1
newington						3					3														1							
newport			2	5	1	10		6	2	7	6	8	1	8	6	5	4	4	7	3			5		4		5		6		22	12
oranienburg				3					1	2	1	1	1	2	4		1						1						1	1	2	2
panama						1		2		1		2		2	2		1		2					2		1			3		3	
paratyphi B												2																	1			
reading				1					1	4	3			1	3	1																
saint-paul				2		8		18	6	14	11	13	5	14	16	6	1		1	1			1		15	1	2		7	2	7	
san-diego				1				1							2	1														1		1
schwarzengrund				3				1			2					1											1					
senftenberg				2		1		3	1	1	2		2	2	1		2		1													
tennessee				1				1	1		3	2		2		1	1	1		1					1				1		3	
thompson				3						7	7	1	3	3	8	3	9		3		2		4		1		2	1	3	1	8	3
typhi		1	1			1	11	3	5			2		7	2	1			1				1				1	2	8		2	10
typhimurium	3		5	89	6	26		30	20	54	85	63	29	108	93	117	49	13	37	4	12		43	1	35	2	27	4	24	1	79	15
typhimurium v cop	2			10		10				6					14			5					7									
weltevreden																																
worthington	1			1							2			1												1				2	
TOTAL	10	1	14	160	9	82	12	169	81	160	180	124	57	356	226	175	107	27	78	13	15	–	90	12	123	6	76	12	88	11	210	77
ALL OTHER*	–	15	3	17	13	11	80	24	10	18	27	11	12	41	40	17	9	12	6	–	1	15	3	4	24	28	11	–	19	3	25	9
TOTAL	**10**	**16**	**17**	**177**	**22**	**93**	**92**	**193**	**91**	**178**	**207**	**135**	**69**	**397**	**266**	**192**	**116**	**39**	**84**	**13**	**16**	**15**	**93**	**16**	**147**	**34**	**87**	**12**	**107**	**14**	**235**	**86**

NOTE: NYA-New York, Albany; NYB-Beth Israel Hospital; NYC-New York City.
Beth Israel Hospital is a reference laboratory and this quarter serotyped a total of 249 cultures.

*See Table II.

TABLE I—Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																				TOTAL	% OF TOTAL	CUMULATIVE TOTAL	% OF CUMULATIVE TOTAL	SEROTYPE
EAST S. CENTRAL				WEST S. CENTRAL				MOUNTAIN								PACIFIC								
KY	TEN	ALA	MIS	ARK	LA	OKL	TEX	MON	IDA	WYO	COL	NM	ARI	UTA	NEV	WAS	ORE	CAL	ALK	HAW				
2	1	1		2	2		6						1			5		10	1	3	71	1.4	136	1.3	*anatum*
		2	1	1					1		1							2			16	0.3	34	0.3	*bareilly*
2	2	1		1	2		2						3				2	6		1	64	1.3	153	1.4	*blockley*
							3											2		1	18	0.4	41	0.4	*braenderup*
			1		3		1				1							4			28	0.5	67	0.6	*bredeney*
2																		4			18	0.4	39	0.4	*chester*
																		1			7	0.1	15	0.1	*cholerae-suis v kun*
							1						1					2			7	0.1	13	0.1	*cubana*
	1	3	1		3		11									3		12		4	82	1.6	224	2.1	*derby*
3	12	3			3	5	4		1		6		3			8	1	8	1	2	363	7.1	664	6.3	*enteritidis*
	1				2		2						1			1					10	0.2	27	0.3	*give*
	10	4	1	2	11		9		1				6	5		2	1	29		1	252	4.9	549	5.2	*heidelberg*
		1			2																18	0.4	27	0.3	*indiana*
3	15	8	1		8	3	7	1	1		4		2		1	6	1	29		9	267	5.2	587	5.5	*infantis*
		2		1	4						1			1			1	9		2	51	1.0	104	1.0	*java*
	2	8		6	1		27								1		4	1			72	1.4	136	1.3	*javiana*
	2				1															1	17	0.3	42	0.4	*litchfield*
	1	1											1							2	7	0.1	11	0.1	*livingstone*
3	3			1	6		2						2			1		6			63	1.2	114	1.1	*manhattan*
																					22	0.4	28	0.3	*miami*
		7	1		7		1														25	0.5	41	0.4	*mississippi*
1	2	2			1		4									7		9			84	1.6	156	1.5	*montevideo*
	1	6	1	1	6		2						1			2		5			72	1.4	116	1.1	*muenchen*
																		3			10	0.2	23	0.2	*newington*
3	14	5	1	7	24	2	55				1		4	2		2		23		7	289	5.7	610	5.7	*newport*
3	2	3			2		14		1		1		1			3	1	12		1	67	1.3	160	1.5	*oranienburg*
							5		1				2			3		6		41	80	1.6	143	1.3	*panama*
						1	14		2							1					21	0.4	41	0.4	*paratyphi B*
																					14	0.3	34	0.3	*reading*
2	1	1		1	4		4				1		2	2		3	1	19		3	195	3.8	430	4.0	*saint-paul*
	1						1	1	1							1		13			25	0.5	67	0.6	*san-diego*
					1											1		1			11	0.2	20	0.2	*schwarzengrund*
		2					5				4		1					1		1	32	0.6	57	0.5	*senftenberg*
2																		3			24	0.5	35	0.3	*tennessee*
				2	4		4				1		2	1		1				5	92	1.8	177	1.7	*thompson*
6	6		2	2	3	1	8		1			3			1	8		34			134	2.6	263	2.5	*typhi*
27	48	16	4	20	20	6	63	2	6		50		19	4	2	38	9	155	2	9	1,574	30.8	3,295	31.0	*typhimurium*
10	6			3	2				3		2		1								81	1.6	155	1.5	*typhimurium v cop*
																				34	34	0.7	61	0.6	*weltevreden*
	1	1																			10	0.2	27	0.3	*worthington*
69	132	77	14	50	122	18	255	4	19	–	73	3	53	15	5	96	21	409	4	127	4,327	84.7	8,922	84.0	TOTAL
1	16	15	–	11	26	8	44	–	1	2	1	47	13	4	2	4	2	62	9	7	783		1,698		ALL OTHERS*
70	**148**	**92**	**14**	**61**	**148**	**26**	**299**	**4**	**20**	**2**	**74**	**50**	**66**	**19**	**7**	**100**	**23**	**471**	**13**	**134**	**5,110**		**10,620**		**TOTAL**

TABLE II OTHER SALMONELLAE REPORTED FROM HUMAN SOURCES, SECOND QUARTER. 1974

SEROTYPE	REPORTING CENTER																							
	ALA	ALK	ARI	ARK	CAL	COL	CON	DEL	DC	FLA	GA	HAW	IDA	ILL	IND	IOW	KAN	KY	LA	MD	MAS	MIC	MIN	MO	NEB
aberdeen														1											
adelaide																									
agona	6		4	3	12		1	1	2		3	2		20	3	2	1	1	9	17	3	22	2	2	
alachua					2						1														
albany					2			1			2										1				
amsterdam					1																				
benfica																									
bern																									
berta							1																		
binza																					2				
birkenhead												1													
bousso																									
bovis-morbificans							1														3	1			
brandenburg		1			3																				
cairo																									
california											1											2			
carrau																									
cerro																							1		
cholerae-suis	1																								
djakarta	1																								
drypool					1																				
dublin			2		10																				
duesseldorf										1															
ealing											1														
eastbourne	1				4		1			1				6	2				1	1	1	2	2	1	
eimsbuettel																									
eppendorf																							1		
essen			1																						
gallinarum																									
gaminara	2																		7						
georgia											1														
gombe					2																				
habana											1								1						
haifa											1														
hartford	1																								
hvittingfoss														2											
ibadan				2																					
inverness																									
johannesburg											3									1		1			
kaapstad																									
kentucky	1		1		1			1				1							1						
kottbus							2							1	2						1				
lindenburg																	1								
lindern													1	1											
loma-linda					1																				
london	1		1		5		2	1		2	4			2					4	3	1	4	2		
luciana					1																				
madelia					1		1																		
meleagridis		1																							
menhaden														1											
minnesota																									
mission															1										
molade																				2					
muenster						1	1			1					1							1			
norwich			2	1													1								
ohio					4									1										1	
onderstepoort					1																				
orion																						1			
oritamerin																3									
oslo					1							2													
paratyphi A			1		2							1									1	1		1	
pensacola										1				1											
phoenix																									
pomona					2																				
poona			1	1	1		1				1			1	1						1	1			
pullorum																									
rubislaw											3								1						
san-juan																									
saphra																									
siegburg										3					1						1	1			
simsbury																									
stanley																					1	1		1	
thomasville					1																				
uganda	1																								
urbana																1							1		
uzaramo																									
virchow					1									1							1				
wassenaar																									
weslaco																									
TOTAL	15	2	13	7	59	1	11	4	2	9	22	7	1	38	12	6	3	1	24	24	17	38	9	6	–
NOT TYPED*	–	7	–	4	3	–	–	–	26	–	3	–	–	3	–	6	–	–	2	–	–	2	–	–	15
TOTAL	**15**	**9**	**13**	**11**	**62**	**1**	**11**	**4**	**28**	**9**	**25**	**7**	**1**	**41**	**12**	**12**	**3**	**1**	**26**	**24**	**17**	**40**	**9**	**6**	**15**

Cumulative totals include isolations of all serotypes (except those listed in table I) reported this year.

*See Table V-A.

TABLE II–Continued

REPORTING CENTER																						TOTAL	CUML. TOTAL	SEROTYPE
NEV	NH	NJ	NM	NYA	NYB	NYC	NC	OHI	OKL	ORE	PA	RI	SC	SD	TEN	TEX	UTA	VT	VA	WAS	WIS	WYO			
											1												1	1	*aberdeen*
																							1	3	*adelaide*
		7			9	4	7	3	3		9		1	1	2	2			4	3	8		179	419	*agona*
					1		1									1							6	8	*alachua*
					1	1		1											1				10	17	*albany*
													1										1	2	*amsterdam*
																							1	1	*benfica*
															1								1	1	*bern*
							1	1								1	1						5	6	*berta*
		1																					3	4	*binza*
									1														1	1	*birkenhead*
																							1	1	*bousso*
		2			1						4									1			13	19	*bovis-morbificans*
																2							6	9	*brandenburg*
									1														1	1	*cairo*
					1																		4	9	*california*
											1												1	1	*carrau*
																	1						2	11	*cerro*
													1										2	10	*cholerae-suis*
																							1	1	*djakarta*
		1				1											1						3	4	*drypool*
							1									2							13	27	*dublin*
																							4	11	*duesseldorf*
							1																1	1	*ealing*
		2				1	1								1	1							29	108	*eastbourne*
											1												1	3	*eimsbuettel*
																							1	1	*eppendorf*
																							1	1	*essen*
					1																		1	1	*gallinarum*
																1							10	15	*gaminara*
																							1	2	*georgia*
									1							1							2	2	*gombe*
																							4	11	*habana*
																							1	2	*haifa*
															1				1		1		4	7	*hartford*
																2							2	2	*hvittingfoss*
																1							4	4	*ibadan*
																							1	3	*inverness*
															2				1				8	13	*johannesburg*
											2												2	3	*kaapstad*
						1					1												8	17	*kentucky*
							1								3								10	21	*kottbus*
																							1	1	*lindenburg*
																							2	2	*lindern*
																							1	1	*loma-linda*
		2			1		3	2			4				1	3			2				50	109	*london*
																1							2	3	*luciana*
																							2	2	*madelia*
																							1	6	*meleagridis*
																							1	1	*menhaden*
		1														2							3	10	*minnesota*
																							1	1	*mission*
																							2	3	*molade*
						1									1								7	16	*muenster*
							1		1							6					1		13	17	*norwich*
																							6	9	*ohio*
																							1	1	*onderstepoort*
																							1	1	*orion*
																							3	6	*oritamerin*
1		2									3												9	14	*oslo*
								1															8	14	*paratyphi A*
																							2	3	*pensacola*
																1							1	1	*phoenix*
																							2	3	*pomona*
					2	1		3	1	1					1	3							21	42	*poona*
					1																		1	1	*pullorum*
																5							9	21	*rubislaw*
					1																		1	1	*san-juan*
																1							1	2	*saphra*
															2	6							14	25	*sieghurg*
					3																		3	4	*simsbury*
							1			1											1		6	11	*stanley*
																							1	5	*thomasville*
							2								1				1				5	8	*uganda*
																			1				4	7	*urbana*
																							1	1	*uzaramo*
											1												2	4	*virchow*
																							1	1	*wassenaar*
																2							2	2	*weslaco*
1	–	18	–	–	22	10	19	11	8	2	27	–	3	1	16	44	3	–	11	4	11	–	542	1,168	TOTAL
1	15	–	47	80	2	–	–	–	–	–	–	13	–	–	–	–	1	3	–	–	6	2	241	530	NOT TYPED*
2	**15**	**18**	**47**	**80**	**24**	**10**	**19**	**11**	**8**	**2**	**27**	**13**	**3**	**1**	**16**	**44**	**4**	**3**	**11**	**4**	**17**	**2**	**783**	**1,698**	**TOTAL**

TABLE III COMMON SALMONELLAE REPORTED FROM NONHUMAN SOURCES, SECOND QUARTER, 1974

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
anatum	2	16	3	10	2		33	1		1	2
bareilly						3	3				–
blockley	1						1	1			1
braenderup			1				1				–
bredeney	1	2					3				–
chester		1				1	2				–
cholerae-suis v kun	1		49	5			55				–
cubana							–	1			1
derby	1	3	5	1		1	11	12			12
enteritidis	6			2		4	12				–
give	1	1		1		1	4			1	1
heidelberg	13	15				2	30			4	4
indiana		3					3				–
infantis	7	3	1				11	1			1
java							–				–
javiana				1			1	1			1
litchfield							–				–
livingstone				1			1	4			4
manhattan		1			1		2				–
miami							–				–
mississippi							–				–
montevideo	12	2			1	1	16	5		1	6
muenchen							–	1			1
newington		1					1	1			1
newport	4	7	2	17		2	32				–
oranienburg	1				1	1	3	6			6
panama				1			1				–
paratyphi B							–				–
reading		8				2	10				–
saint-paul	4	21		1		1	27				–
san-diego		14		1	1	1	17	1			1
schwarzengrund	1	2					3				–
senftenberg		3			1	4	8	10	1	1	12
tennessee	1	1					2	8			8
thompson	6			1	1	1	9				–
typhi							–				–
typhimurium	46	10	48	172	14	49	339	2			2
typhimurium v cop	3		12	45	5	16	81			3	3
weltevreden							–				–
worthington	8	2	1				11	15		1	16
TOTAL	119	116	122	259	27	90	733	70	1	12	83
ALL OTHER*	33	18	16	35	3	15	120	32	–	4	36
TOTAL	**152**	**134**	**138**	**294**	**30**	**105**	**853**	**102**	**1**	**16**	**119**

*See Table IV.

TABLE III—Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	TOTAL	CUMULATIVE TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
4	1		2	2			4	5	49	57	*anatum*
							–		3	9	*bareilly*
							–		2	3	*blockley*
	2						–	1	4	18	*braenderup*
							–	1	4	9	*bredeney*
							–		2	3	*chester*
							–		55	55	*cholerae-suis v kun*
2					1		1		4	9	*cubana*
							–	1	24	30	*derby*
	2						–	6	20	24	*enteritidis*
1	1					5	5		12	13	*give*
						1	1	3	38	45	*heidelberg*
							–		3	6	*indiana*
6	3		1	1			2	8	31	40	*infantis*
	11					4	4		15	20	*java*
						1	1		3	3	*javiana*
3							–	1	4	9	*litchfield*
							–		5	10	*livingstone*
	8			1			1	4	15	23	*manhattan*
1							–		1	1	*miami*
							–		–	–	*mississippi*
2	10					6	6	19	59	67	*montevideo*
3	1						–		5	11	*muenchen*
2							–		4	5	*newington*
4	6						–	3	45	58	*newport*
1	4						–		14	32	*oranienburg*
	1						–		2	5	*panama*
							–		–	8	*paratyphi B*
							–		10	12	*reading*
	1						–	4	32	34	*saint-paul*
							–		18	23	*san-diego*
							–		3	3	*schwarzengrund*
						4	4	3	27	28	*senftenberg*
	3				1		1	4	18	20	*tennessee*
	1					1	1	2	13	17	*thompson*
							–		–	–	*typhi*
12	5			2	1	2	5	5	368	443	*typhimurium*
1							–	3	88	102	*typhimurium v cop*
							–		–	3	*weltevreden*
							–	10	37	37	*worthington*
42	60	–	3	6	3	24	36	83	1,037	1,295	TOTAL
17	45	–	2	6	2	16	26	41	285	385	ALL OTHER*
59	**105**	**–**	**5**	**12**	**5**	**40**	**62**	**124**	**1,322**	**1,680**	**TOTAL**

TABLE IV OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES, SECOND QUARTER, 1974

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
adelaide							–				–
agona	4	1					5	1			1
alachua						1	1				–
albany		2					2				–
bere							–				–
binza						1	1				–
bornum	2					1	3				–
bovis-morbificans				4			4				–
california	3		1				4				–
carrau							–				–
cerro		2					2				–
chailey							–				–
chameleon							–				–
chicago							–				–
cholerae-suis			1				1				–
degania							–				–
drypool						1	1	1			1
dublin				18			18				–
eastbourne							–				–
eimsbuettel	1	2					3				–
gallinarum	2						2				–
gaminara							–				–
habana							–	16		1	17
hartford							–				–
hvittingfoss					2		2				–
johannesburg	2						2				–
kentucky	1						1	3			3
kottbus	1	2					3				–
lexington							–			1	1
london							–				–
manila							–	8			8
matopeni							–				–
meleagridis		1		3			4				–
minneapolis	1						1				–
minnesota		6					6			1	1
mission							–				–
muenster					1		1				–
orientalis							–				–
orion						1	1				–
oslo						1	1				–
poona	1					1	2	1			1
pullorum	12	1					13				–
rubislaw							–				–
siegburg	1	1		1		1	4			1	1
simsbury							–				–
singapore							–				–
stanley							–				–
taksony							–	1			1
thomasville			1				1				–
typhi-suis			2				2				–
uganda							–				–
urbana							–				–
wandsbek							–				–
TOTAL	31	18	5	26	3	8	91	31	–	4	35
NOT TYPED*	2	–	11	9	–	7	29	1	–	–	1
TOTAL	**33**	**18**	**16**	**35**	**3**	**15**	**120**	**32**	**–**	**4**	**36**

*See Table V-B

TABLE IV—Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	TOTAL	CUMULATIVE TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
	1						–		1	1	*adelaide*
2			1			1	2	1	11	22	*agona*
							–	1	2	7	*alachua*
							–		2	5	*albany*
	1						–		1	1	*bere*
							–		1	3	*binza*
							–		3	4	*bornum*
							–		4	4	*bovis-morbificans*
			1				1	4	9	9	*california*
1							–		1	1	*carrau*
						2	2	1	5	6	*cerro*
1							–		1	1	*chailey*
	1						–		1	1	*chameleon*
	1						–		1	1	*chicago*
							–		1	7	*cholerae-suis*
	1						–		1	1	*degania*
							–		2	2	*drypool*
					1		1	4	23	25	*dublin*
							–	1	1	8	*eastbourne*
							–		3	3	*eimsbuettel*
							–		2	2	*gallinarum*
						2	2		2	2	*gaminara*
4	1				1		1		23	23	*habana*
2							–		2	2	*hartford*
						2	2		4	4	*hvittingfoss*
							–	8	10	12	*johannesburg*
							–		4	5	*kentucky*
							–		3	4	*kottbus*
	1						–		2	2	*lexington*
2				3			3	2	7	10	*london*
							–		8	9	*manila*
	1						–		1	1	*matopeni*
							–		4	5	*meleagridis*
							–		1	1	*minneapolis*
							–	1	8	12	*minnesota*
	3						–		3	4	*mission*
							–		1	3	*muenster*
						1	1		1	1	*orientalis*
							–	3	4	4	*orion*
	1			1			1		3	3	*oslo*
	9						–		12	15	*poona*
							–		13	13	*pullorum*
	1					5	5		6	8	*rubislaw*
							–	1	6	8	*siegburg*
							–	6	6	6	*simsbury*
							–	1	1	1	*singapore*
						1	1		1	1	*stanley*
							–		1	5	*taksony*
							–	1	2	3	*thomasville*
							–		2	2	*typhi-suis*
				2			2		2	2	*uganda*
	15						–		15	18	*urbana*
	1						–		1	2	*wandsbek*
12	39	–	2	6	2	14	24	35	236	325	TOTAL
5	6	–	–	–	–	2	2	6	49	60	NOT TYPED*
17	**45**	**–**	**2**	**6**	**2**	**16**	**26**	**41**	**285**	**385**	**TOTAL**

TABLE V SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY SECOND QUARTER, 1974

A. HUMAN SOURCES

REPORTING CENTER	GROUP														TOTAL
	A	B	C	C1	C2	D	E	E1	E3	I	M	P	W	UNK	
ALASKA		3			1	3									7
ARKANSAS		2		1	1										4
CALIFORNIA		1				1								1	3
DISTRICT OF COLUMBIA	1	13	1		1	3	1							6	26
GEORGIA														3	3
ILLINOIS		1				1								1	3
IOWA	2	1	1											2	6
LOUISIANA					1				1						2
MICHIGAN		1												1	2
NEBRASKA		13	1	1											15
NEVADA				1											1
NEW HAMPSHIRE		9		2	1	2								1	15
NEW MEXICO		34		6	4	3									47
NEW YORK–A		55	3	3	5	11	3								80
NEW YORK–BI		1												1	2
RHODE ISLAND		8		1				1						3	13
UTAH		1													1
VERMONT		2				1									3
WISCONSIN		3	1											2	6
WYOMING		1				1									2
TOTAL	**3**	**149**	**7**	**15**	**14**	**26**	**4**	**1**	**1**					**21**	**241**

B. NONHUMAN SOURCES

REPORTING CENTER	GROUP														TOTAL
	A	B	C	C1	C2	D	E	E1	E3	I	M	P	W	UNK	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT		18		6		1		1						3	29
ANIMAL FEEDS														1	1
WILD ANIMALS AND BIRDS		2		1										2	5
REPTILES AND ENVIRONMENT						1				1	1	1	1	1	6
HUMAN DIETARY ITEMS														2	2
MISCELLANEOUS		3					1							2	6
TOTAL	–	**23**	–	**7**	–	**2**	**1**	**1**	–	**1**	**1**	**1**	**1**	**11**	**49**

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The State Epidemiologists are the key to all disease surveillance activities. They are responsible for collecting, interpreting, and transmitting data and epidemiologic information from their individual States. Their contributions to this report are gratefully acknowledged. In addition, valuable contributions are made by State Laboratory Directors; we are indebted to them for their valuable support.

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